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LA0020559; A119306; PER20090001

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Designed Capacity: 1.496 MGD

Type of Flow Measurement which the facility is currently using:

Parschall Flume and Continuous Recorder

V.

**RECEIVING WATERS:**

The discharge is into an unnamed drainage ditch, thence into the Boeuf River in segment 080901 of the Ouachita River Basin. This segment is listed on the 303(d) list of impaired waterbodies.

The **critical low flow** (7Q10), for the purpose of limit calculations, is 3.51 cfs based on a report from Todd Franklin dated January 23, 2009.

The **hardness value** is 92.9 mg/l and the **fifteenth percentile value for TSS** is 8 mg/l based on a report from Todd Franklin dated January 23, 2009.

The designated uses and degree of support for Segment 080901 of the Ouachita River Basin are as indicated in the table below<sup>1/</sup>:

Degree of Support of Each Use						
Primary Contact Recreation	Secondary Contact Recreation	Propagation of Fish & Wildlife	Outstanding Natural Resource Water	Drinking Water Supply	Shell fish Propagation	Agriculture
Full	Full	Not Supported	N/A	N/A	N/A	N/A

<sup>1/</sup> The designated uses and degree of support for Segment 080901 of the Ouachita River Basin are as indicated in LAC 33:IX.1123.C.3, Table (3) and the 2006 Water Quality Management Plan, Water Quality Inventory Integrated Report, Appendix A, respectively.

VI.

**ENDANGERED SPECIES:**

The receiving waterbody, Subsegment 080901 of the Ouachita River Basin, is not listed in Section II.2 of the Implementation Strategy as requiring consultation with the U. S. Fish and Wildlife Service (FWS). This strategy was submitted with a letter dated November 24, 2008 from Rieck (FWS) to Nolan (LDEQ). Therefore, in accordance with the Memorandum of Understanding between the LDEQ and the FWS, no further informal (Section 7, Endangered Species Act) consultation is required. It was determined that the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat.

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**VII. HISTORIC SITES:**

The discharge is from an existing facility location, which does not include an expansion beyond the existing perimeter. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the 'Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits' no consultation with the Louisiana State Historic Preservation Officer is required.

**VIII. PUBLIC NOTICE:**

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the statement of basis. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

For additional information, contact:

Ms. Rachel Davis  
Permits Division  
Department of Environmental Quality  
Office of Environmental Services  
P. O. Box 4313  
Baton Rouge, Louisiana 70821-4313

**IX. PROPOSED PERMIT LIMITS:**

Subsegment 080901, Boeuf River—Arkansas State Line to Ouachita River, is listed on LDEQ's Final 2006 303(d) List as impaired for mercury. Although TMDLs for the Ouachita River Basin were due to be completed by 2001, a TMDL has not yet been developed for mercury for this waterbody. A TMDL will be scheduled following completion of the EPA Consent Decree TMDL Schedule. A reopener clause will be established in the permit to allow for the requirement of more stringent effluent limitations and requirements as imposed by a future TMDL.

**Mercury**

Based on the Water Quality Screen a limitation for mercury will be required for this facility.

Subsegment 080901 was previously listed as impaired for phosphorus, nitrogen, organic enrichment/low DO, suspended solids/turbidity/ siltation, Carbofuran, DDT, Dioxin, and Toxaphene for which the below TMDL's have been developed. The Department of Environmental Quality reserves the right to impose more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional TMDLs and/or water quality studies. The DEQ also reserves the right to modify or revoke and reissue this permit based upon any changes to established TMDLs

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for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as necessary to achieve compliance with water quality standards.

The following TMDLs have been established for subsegment 080901:

Total Maximum Daily Load (TMDL) for TSS, Turbidity, and Siltation for 13 Subsegments in the Ouachita River Basin

As per the TMDL, "Point sources do not represent a significant source of TSS as defined in this TMDL. Because an enforceable mechanism is in place to protect from discharges of organic suspended solids, no TMDL is required for these materials." Therefore, TSS will be permitted according to current state water quality standards.

Boeuf River Watershed TMDL for Biochemical Oxygen-Demanding Substances and Nutrients

The Boeuf River, Subsegment 080901, was on the court-ordered 303(d) list; was part of the 1999 ambient sampling monitoring program and was listed in the 2000 305(b) report. The subsegment was found to be "not supporting" its designated use of Fish and Wildlife Propagation. It was "fully supporting" all other uses. Boeuf River was subsequently scheduled for TMDL development with other listed waters in the Ouachita River Basin. The suspected cause of impairment was organic enrichment/low DO, and the suspected sources were agriculture and hydromodification. A review of the dischargers showed that industrial point sources and all but one municipal point source were not significant sources of BOD loading and were unlikely to impact the DO in the Boeuf River. Based on the size and nature of the facility, the Department believes that the current state water quality standards for BOD will adequately protect the receiving waterbody from further impairment from organic enrichment/low DO and nutrients.

LDEQ has not established numeric water quality standards for phosphorous. The narrative criterion for nutrients reads, "The naturally occurring range of nitrogen-phosphorus ratios shall be maintained." LDEQ has determined that the ratio is being maintained for this subsegment, and therefore, no requirements for phosphorus will be placed in this permit.

Total Maximum Daily Load (TMDL) for Selected Pesticides in the Ouachita River Basin

Per the TMDL, "There are no known point sources for a Carbofuran, DDT, Methyl Parathion or Toxaphene in Big Creek, Boeuf River, Joe's Bayou, Macon Bayou or the Tensas River watersheds; therefore, the WLA will be set to zero." Since this facility discharges sanitary wastewater and there is little possibility that the discharges will contain pesticides, no limitations for pesticides will be required of this facility.

**Final Effluent Limits:**

**OUTFALL 001**

Final limits shall become effective on the effective date of the permit and expire on the expiration date of the permit.

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Effluent Characteristic	Monthly Avg. (lbs./day)	Monthly Avg.	Weekly Avg.	Basis
CBOD <sub>5</sub> May-October November-April	62 125	5 mg/l 10 mg/l	8 mg/l 15 mg/l	Based on the <u>Boeuf River Watershed TMDL for Biochemical Oxygen-Demanding Substances and Nutrients</u>
TSS	187	15 mg/l	23 mg/l	Since there is no numeric water quality criterion for TSS, and in accordance with the current Water Quality Management Plan, the TSS effluent limitations shall be based on a case-by-case evaluation of the treatment technology being utilized at a facility. Therefore, a Technology Based Limit has been established through Best Professional Judgement for the type of treatment technology utilized at this facility.
Ammonia-Nitrogen	Report	5 mg/l	10 mg/l	Based on the <u>Boeuf River Watershed TMDL for Biochemical Oxygen-Demanding Substances and Nutrients</u>

Effluent Characteristic	Monthly Avg. (lbs./day)	Daily Maximum (lbs/day)	Basis
Mercury*	0.0008	0.0012	Water Quality Screen indicated a need for a WQBL. See Appendix B-1 for additional information.

\*Please note that the mercury limitation is more stringent than the previous permit due to the conversion factor for mercury from the Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria changing from 2.04 to 1.74.

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**Other Effluent Limitations:**

**1) Fecal Coliform**

The discharge from this facility is into a water body which has a designated use of Primary Contact Recreation. According to LAC 33:IX.1113.C.5, the fecal coliform standards for this water body are 200/100 ml and 400/100 ml. Therefore, the limits of 200/100 ml (Monthly Average) and 400/100 ml (Weekly Average) are proposed as Fecal Coliform limits in the permit. These limits are being proposed through Best Professional Judgment in order to ensure that the water body standards are not exceeded, and due to the fact that existing facilities have demonstrated an ability to comply with these limitations using present available technology.

**2) pH**

According to LAC 33:IX.3705.A.1., POTW's must treat to at least secondary levels. Therefore, in accordance with LAC 33:IX.5905.C, the pH shall not be less than 6.0 standard units nor greater than 9.0 standard units at any time.

**3) Solids and Foam**

There shall be no discharge of floating solids or visible foam in other than trace amounts in accordance with LAC 33:IX.1113.B.7.

**4) Total Residual Chlorine**

If chlorination is used to achieve the limitations for Fecal Coliform Bacteria, the effluent shall contain NO MEASURABLE Total Residual Chlorine (TRC) after disinfection and prior to disposal. The calculated WQBL for TRC is 0.009 mg/l. However, given the current constraints pertaining to chlorine analytical methods, No MEASURABLE will be defined as less than 0.1 mg/l of chlorine. Limits set in accordance with the Water Quality Screen (see Appendix B-1) and the previous LPDES permit.

**5) Toxicity Characteristics**

In accordance with EPA's Region 6 Post-Third Round Toxics Strategy, permits issued to treatment works treating domestic wastewater with a flow (design or expected) greater than or equal to 1 MGD shall require biomonitoring at some frequency for the life of the permit or where available data show reasonable potential to cause lethality, the permit shall require a whole effluent toxicity (WET) limit (*Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards*, April 16, 2008, VERSION 6).

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates the effects of synergism of the effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. LAC 33:IX.1121.B.3. provides for the use of biomonitoring to monitor the effluent for protection of State waters. The biomonitoring procedures stipulated as a condition of this permit are as follows:

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The permittee shall submit the results of any biomonitoring testings performed in accordance with the LPDES Permit No. LA0020559, **Biomonitoring Section** for the organisms indicated below.

TOXICITY TESTSFREQUENCY

Chronic static renewal 7-day survival & reproduction test  
using Ceriodaphnia dubia (Method 1002.0)

1/quarter<sup>1</sup>

Chronic static renewal 7-day survival & growth test  
using fathead minnow (Pimephales promelas) (Method 1000.0)

1/quarter<sup>1</sup>

<sup>1</sup> Since a WET limit shall be incorporated into this permit, quarterly testing is required for the first five years following the effective date of the WET limit in the new permit. Following successful completion of this period with no demonstrated lethal or sub-lethal effects, a reduction may be appropriate.

Dilution Series - The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional concentrations shall be **17%, 22%, 30%, 40%, and 53%**. The low-flow effluent concentration (Biomonitoring dilution) and WET limit is defined as 40% effluent. The critical dilution is calculated in Appendix B-1 of this fact sheet. Results of all dilutions shall be documented in a full report according to the test method publication mentioned in the **Biomonitoring Section** under Whole Effluent Toxicity. This full report shall be submitted to the Office of Environmental Compliance as contained in the Reporting Paragraph located in the **Biomonitoring Section** of the permit.

The permit may be reopened to require effluent limits, additional testing, and/or

other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.2383. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act

X.

PREVIOUS PERMITS:

LPDES Permit No. LA0020559:

Issued: January 1, 2004

Expired: December 31, 2008

Effluent CharacteristicMonitoring RequirementsDischarge Limitations

	<u>Monthly Avg.</u>	<u>Weekly Avg.</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow	Report	Report	Continuous	Recorder
CBOD <sub>5</sub>				
May-October	5 mg/l	8 mg/l	2/week	6-Hour Comp
November-April	10 mg/l	15 mg/l	2/week	6-Hour Comp
TSS	15 mg/l	23 mg/l	2/week	6-Hour Comp
Ammonia-Nitrogen	5 mg/l	10 mg/l	2/week	6-Hour Comp

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TRC	NO MEASURABLE	2/week	Grab
Fecal Coliform Colonies	200 400	2/week	Grab
pH	Range Between 6.0 -9.0	2/week	Grab
Mercury	0.002 lbs/day 0.005 lbs/day	1/month	24-hour Comp

The permit contains pretreatment language.

The permit contains biomonitoring

The permit contains pollution prevention language.

## XI.

**ENFORCEMENT AND SURVEILLANCE ACTIONS:****A) Inspections**

A review of the files indicates the following inspections were performed during the period beginning **November 2006** and ending **November 2008** for this facility.

Date – February 22, 2007

Inspector - USEPA

Findings and/or Violations -

1. One overflow noted for 2006
2. One cell of the marsh unit had rainwater in it but it was not being utilized as part of the treatment method
3. About 20% of the rock filter cells were over grown but the other 80% had been cleaned out.
4. Sewage was flowing onto both the rock filter cells from the manhole on the eastside but water should be flowing under ground

Date – March 19, 2008

Inspector – Madelon Carter

Findings and/or Violations –

1. No DMRs for 3/07, 9/07, 10/07, 11/07, 12/07, 1/08, and 2/08
2. No Biomonitoring for 07-09/07 and 10-12/07
3. No Priority Pollutant DMR present
4. No permit application present
5. All treatment units not being used
6. Excessive vegetation in rock/reed pond
7. Three aerators not being utilized due to power failure
8. The Flow check was greater than 10% whereas the secondary device needs to be calibrated
9. No notice was given in the change of treatment system
10. Many excursions were noted in the DMRs

Date – May 28, 2008

Inspector – John Posey

Findings and/or Violations –

1. On 5/19/08 an unknown amount of sewage was overflowed from the marsh unit
2. The cause was due to the failure of the marsh pump. The problem was fixed on 5/20/08



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**B) Compliance and/or Administrative Orders**

A review of the files indicates the following most recent enforcement actions administered against this facility:

**EPA Issuance:**

Docket # - CWA-06-2007-1720

Date Issued – November 8, 2006

**Findings of Fact:**

1. Permittee violated the permit limits
2. Did not report non-compliances
3. Had not operated and maintained the facility
4. Flow measurement device had not been calibrated and was functioning improperly
5. Failed to notify the department about an unauthorized discharge
6. Violated Flow permit level
7. Failed to notify state about physical alteration to the plant
8. Failed to submit DMRs

**Order:**

1. Take action to correct all these violations
2. Submit a written report in 30 days on how they were going to fix the violations
3. Arrange a meeting with EPA to discuss the violations

**C) DMR Review**

A review of the discharge monitoring reports for the period beginning **November 2006** through **November 2008** has revealed the following violations:

Period of Excursion	Parameter	Outfall	Permit Limit	Reported Quantity
December 2006	Ammonia	001	5 mg/l	7.22 mg/l
	Ammonia		10 mg/l	12.1 mg/l
April 2007	TSS (mass)	001	187 lbs/day	682.5 lbs/day
	TSS		15 mg/l	24.8 mg/l
	Ammonia (mass)		62 lbs/day	115.6 lbs/day
	CBOD (mass)		125 lbs/day	212 lbs/day
May 2007	Ammonia	001	5 mg/l	5.9 mg/l
	Ammonia		10 mg/l	11.6 mg/l
	CBOD		5 mg/l	6.3 mg/l
	CBOD (mass)		62 lbs/day	64 lbs/day
June 2007	CBOD	001	5 mg/l	10.2 mg/l
	CBOD		8 mg/l	10.5 mg/l
July 2007	CBOD	001	62 mg/l	91.7 mg/l
	CBOD		5 mg/l	7.8 mg/l
	CBOD (mass)		8 lbs/day	13.3 lbs/day
August 2007	Ammonia	001	5 mg/l	5.1 mg/l
	CBOD		5 mg/l	6.2 mg/l

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	CBOD		8 mg/l	8.4 mg/l
September 2007	DID NOT REPORT	001		
October 2007	DID NOT REPORT	001		
November 2007	DID NOT REPORT	001		
December 2007	DID NOT REPORT	001		
January 2008	DID NOT REPORT	001		
February 2008	DID NOT REPORT	001		
March 2008	Fecal TRC	001	400 <0.1 mg/l	500 2.5 mg/l
April 2008	Fecal TRC	001	400 <0.1 mg/l	1,000 2.8 mg/l
May 2008	Fecal CBOD CBOD TRC	001	400 5 mg/l 8 mg/l <0.1 mg/l	1,000 5.6 mg/l 10.3 mg/l 2.8 mg/l
June 2008	Fecal CBOD TRC	001	400 8 mg/l <0.1 mg/l	2,210 8.5 mg/l 2.9 mg/l
July 2008	TRC	001	<0.1 mg/l	3.4 mg/l
August 2008	Fecal TRC	001	400 <0.1 mg/l	1,000 2.7 mg/l

## XII.

**ADDITIONAL INFORMATION:**

The Louisiana Department of Environmental Quality (LDEQ) reserves the right modify or revoke and reissue this permit based upon any changes to established TMDL's for this discharge, or to accommodate for pollutant trading provisions in approved TMDL watersheds as requested by the permittee and/or as necessary to achieve compliance with water quality standards. Therefore, prior to upgrading or expanding this facility, the permittee should contact the Department to determine the status of the work being done to establish future effluent limitations and additional permit conditions.

This permit may be modified, or alternatively, revoked and reissued, to comply with any applicable effluent standard or limitations issued or approved under sections 301(b)(2)(C) and (D); 304(b)(2); and 307(a)(2) of the Clean Water Act or more stringent discharge limitations and/or additional restrictions in the future to maintain the water quality integrity and the designated uses of the receiving water bodies based upon additional water quality studies and/or TMDL's, if the effluent standard, limitations, water quality studies or TMDL's so issued or approved:

- a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
- b) Controls any pollutant not limited in the permit; or
- c) Requires reassessment due to change in 303(d) status of waterbody; or

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- d) Incorporates the results of any total maximum daily load allocation, which may be approved for the receiving water body.

Please be aware that the Department has the authority to reduce monitoring frequencies when a permittee demonstrates two or more consecutive years of permit compliance. Monitoring frequencies established in LPDES permits are based on a number of factors, including but not limited to, the size of the discharge, the type of wastewater being discharged, the specific operations at the facility, past compliance history, similar facilities and best professional judgment of the reviewer. We encourage and invite each permittee to institute positive measures to ensure continued compliance with the LPDES permit, thereby qualifying for reduced monitoring frequencies upon permit reissuance. If the Department can be of any assistance in this area, please do not hesitate to contact us. As a reminder, the Department will also consider an increase in monitoring frequency upon permit reissuance when the permittee demonstrates continued non-compliance.

Final effluent loadings (i.e. lbs/day) have been established based upon the permit limit concentrations and the design capacity of 1.496 MGD.

Effluent loadings are calculated using the following example:

$$\text{CBOD: } 8.34 \text{ gal/lb} \times 1.496 \text{ MGD} \times 10 \text{ mg/l} = 125 \text{ lb/day}$$

At present, the **Monitoring Requirements, Sample Types, and Frequency of Sampling** as shown in the permit are standard for facilities of flows between 1.0 and 5.0 MGD.

<u>Effluent Characteristics</u> <u>Monitoring Requirements</u>	<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>
Flow	Continuous	Recorder
CBOD <sub>5</sub>	2/week	6 Hr. Comp
Total Suspended Solids	2/week	6 Hr. Comp
Ammonia-Nitrogen	2/week	6 Hr. Comp
TRC	2/week	Grab
Fecal Coliform Bacteria	2/week	Grab
Biomonitoring		
<u>Ceriodaphnia dubia</u> (Method 1002.0)	1/quarter	24 Hr. Comp
<u>Pimephales promelas</u> (Method 1000.0)	1/quarter	24 Hr. Comp
pH	2/week	Grab

**Pretreatment Requirements**

Due to the absence of pretreatment categorical standards for the indirect discharges listed above or because the discharge is of sanitary wastewater only, it is recommended that LDEQ Option 1 Pretreatment Language be included in LPDES Permit LA0020559. This language is established for municipalities that do not have either an approved or required Pretreatment program. This recommendation is in accordance with 40 CFR Part 403 regulations, the General Pretreatment Regulations for Existing and New Sources of Pollution contained in LAC Title 33, Part IX, Chapter 61 and the Best Professional Judgement (BPJ) of the reviewer.

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**XIII            TENTATIVE DETERMINATION:**

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in this Statement of Basis.

**XIV            REFERENCES:**

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 8, "Wasteload Allocations / Total Maximum Daily Loads and Effluent Limitations Policy," Louisiana Department of Environmental Quality, 2005.

Louisiana Water Quality Management Plan / Continuing Planning Process, Vol. 5, "Water Quality Inventory Section 305(b) Report," Louisiana Department of Environmental Quality, 1998.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Chapter 11 - "Louisiana Surface Water Quality Standards", Louisiana Department of Environmental Quality, 2004.

Louisiana Administrative Code, Title 33 - Environmental Quality, Part IX - Water Quality Regulations, Subpart 2 - "The LPDES Program", Louisiana Department of Environmental Quality, 2004.

Low-Flow Characteristics of Louisiana Streams, Water Resources Technical Report No. 22, United States Department of the Interior, Geological Survey, 1980.

Index to Surface Water Data in Louisiana, Water Resources Basic Records Report No. 17, United States Department of the Interior, Geological Survey, 1989.

LPDES Permit Application to Discharge Wastewater, Town of Rayville, Rayville Wastewater Treatment Facility, January 5, 2009.

## APPENDIX I

**Numeric Toxic Limits:** LDEQ has reviewed and evaluated the effluent analyses submitted by the permittee, and examined the following pollutants that are regulated by LAC 33:IX.1113.C.6. in accordance with the implementation procedures outlined under the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, October 30, 1995. Please see Appendix B-1, Water Quality Screen Spreadsheet.

Pollutant	Ce <sup>1</sup>	Ce x 2.13 <sup>2</sup>	Water Quality Based Limit <sup>3</sup>	Drinking Water Source	Permit Limit ?
Mercury	0.00489 lbs/day	0.022lbs/day	0.0008 lbs/day	-----	yes
TRC	2.83 µg/l	12.84 lbs/day	0.114 lbs/day	-----	yes

- 1/ Metals concentration results were presented as total metals in lab analysis submitted by the permittee. All pollutants calculated in µg/l.
- 2/ For the reported effluent concentrations (Ce) it is estimated that 95% of the concentrations of chemicals taken over time will be 2.13 times the Ce or less.
- 3/ The water quality based limit is the maximum allowable instream concentration for that pollutant to be in compliance with water quality standards. Louisiana Water Quality Criteria for metals are hardness dependent, and expressed as dissolved metals. The water quality based limit is calculated with a conversion for metals limits expressed as total metals.

The following steps were used in evaluating the potential toxicity of the analyzed pollutants (see Appendix B-1):

- i. An evaluation of the applicability of the effluent data.

Results of the PPS were entered and compared to EPA's Minimum Quantification Levels (MQL's) to determine the potential presence of the respective toxic pollutant. Those pollutants with reported laboratory Method Detection Levels (MDL's) which exceed their respective EPA MQL's are determined to be reasonably present in the effluent and an evaluation of their potential toxicity is determined. Those pollutants with MDLs less than the MQL are determined to be not potentially present in the effluent and eliminated from further evaluation.

- ii. Calculation of permit limits based on applicable water quality standards.

Applicable water quality criteria are listed in the Appendix B-1 in Columns 12-14. These values were used to calculate the Waste Load Allocations (WLAs) for each of the toxic pollutants. The WLA is the maximum allowable concentration of a pollutant necessary to meet the respective water quality criteria. The WLAs are calculated as described in the State's Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, dated October 30, 1995, as follows:

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Complete Mix Balance Model for Waste Load Allocation

Qe	=	plant effluent, MGD = 1.496
Qr	=	critical flow of receiving stream, 3.51 cfs
Fs	=	MZ, ZID flow fraction, LAC 33:IX.1115.D.7 and 8 (MZ = 1, and ZID = 0.1)
Cr	=	numerical criteria value from LAC 33:IX.1113, Table 1
Cu	=	ambient instream concentration for pollutant. In the absence of accurate supporting data, assume Cu = 0
WLA	=	concentration for pollutant at end-of-pipe based on aquatic life and human health numerical criteria (site specific dilution type)
LTA	=	long term average, units same as WLA
WQBL	=	effluent water quality based limit.

$$\text{Dilution factor} = \frac{Q_e}{(Q_r F_s + Q_e)}$$

$$\begin{aligned} \text{Dilution factor (acute)} &= \frac{1.496}{(3.51)(0.6463)(0.1) + 1.496} \\ &= 0.87 \end{aligned}$$

$$\begin{aligned} \text{Dilution factor (chronic)} &= \frac{1.496}{(3.51)(0.6463)(1.0) + 1.496} \\ &= 0.397 \end{aligned}$$

$$\text{WLA} = (\text{Cr/Dilution factor}) - (F_s Q_r C_u / Q_e)$$

iii. Conversion of dissolved metals criteria for aquatic life to total metals.

Metals criteria for aquatic life protection are based on dissolved metals concentrations and hardness values averaged from data compilations contained in the Louisiana Water Quality Data Summary. A dissolved to total metal conversion will be implemented. Hardness and TSS are a function of the conversion. This involves determining a linear partition coefficient for the metal of concern and using this to determine the fraction of metal dissolved, so that the dissolved metal ambient criteria may be translated to a total effluent limit. The average hardness value used for the analysis is mg/l CaCO<sub>3</sub> (USGS data). The 15th percentile TSS value is mg/l. The formula for converting dissolved metals to total metals for streams and lakes are provided below.

K <sub>p</sub>	=	Linear partition coefficient
K <sub>po</sub>	=	found in Table A below
"	=	found in Table A below
TSS	=	total suspended solids concentration found in receiving stream or approximation thereof (nearest most representative site), lowest 15th percentile, units in mg/l
C <sub>D</sub> /C <sub>T</sub>	=	Fraction of metal dissolved
Cr	=	Dissolved criteria value for metal in water quality standards

$$K_p = K_{po} \times \text{TSS}^n$$

$$K_p = (2.9 \times 10^6) \times 8^{(-1.14)}$$

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$$\text{then, } \frac{C_D}{C_T} = \frac{1}{1 + (K_P)(TSS)(10^{-6})}$$

$$\frac{C_D}{C_T} = \frac{1}{1 + (270,941.43)(8)(10^{-6})}$$

$$= 0.316.$$

therefore,

$$\text{Total Metal} = \frac{C_r}{(C_D/C_T)}$$

TABLE A

LINEAR PARTITION COEFFICIENTS  
FOR PRIORITY METALS IN STREAMS AND LAKES

(Delos et. al, 1984) (\*1)

METAL	STREAMS		LAKES	
	$K_{po}$	" "	$K_{po}$	" "
Arsenic	$0.48 \times 10^6$	-0.73	$0.48 \times 10^6$	-0.73
Cadmium	$4.00 \times 10^6$	-1.13	$3.52 \times 10^6$	-0.92
Chromium III (*2)	$3.36 \times 10^6$	-0.93	$2.17 \times 10^6$	-0.27
Copper	$1.04 \times 10^6$	-0.74	$2.85 \times 10^6$	-0.9
Lead	$2.80 \times 10^6$	-0.8	$2.04 \times 10^6$	-0.53
Mercury	$2.90 \times 10^6$	-1.14	$1.97 \times 10^6$	-1.17
Nickel	$0.49 \times 10^6$	-0.57	$2.21 \times 10^6$	-0.76
Zinc	$1.25 \times 10^6$	-0.7	$3.34 \times 10^6$	-0.68

(\*1) Delos, C. G., W. L. Richardson, J. V. DePinto, R. B. Ambrose, P. W. Rogers, K. Rygwelski, J. P. St. John, W. J. Shaughnessey, T. A. Faha, W. N. Christie. Technical Guidance for performing Waste Load Allocations, Book II: Streams and Rivers. Chapter 3: Toxic Substances, for the U. S. Environmental Protection Agency. (EPA-440/4-84-022).

(\*2) Linear partition coefficients shall not apply to the Chromium VI numerical criterion. The approved analytical method for Chromium VI measures only the dissolved form. Therefore, permit limits for Chromium VI shall be expressed in the dissolved form. See 40 CFR 122.45(c)(3).

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$$WLA_{a,c,h} = (Cr/Dilution\ factor) - (FsQrCu/Qe)$$

$$WLA_{acute} = (5.49/0.87) - [(3.51)(0.6463)(0.1)/1.496] = 6.31$$

$$WLA_{chronic} = (0.038/0.397) - [(3.51)(0.6463)(1)/1.496] = 0.096$$

iv. Calculation of Long Term Averages (LTA's) and Permit Limits.

Comparison of the reported effluent data (converted to the 95th percentile) to the calculated effluent limitations. Long term averages are listed in the Appendix B-1 in Columns 15-17.

Long term averages are calculated for each WLA (based on aquatic and human health criteria). The LTA's are calculated as follows:

$$LTA_a = WLA_a \times 0.32$$

$$LTA_c = WLA_c \times 0.53$$

$$LTA_h = WLA_h$$

$$LTA_{acute} = 6.31 \times 0.32 = 2.01$$

$$LTA_{chronic} = 0.096 \times 0.53 = 0.051$$

A comparison of each LTA is made and the lowest (most restrictive) is selected to calculate the effluent limitations. The most limiting LTA is listed in Appendix B-1, Column 18.

Calculation of permit limits if aquatic life LTA is more limiting:

$$\text{Daily Average} = \text{Min}(LTA_a, LTA_c) \times 1.31$$

$$\text{Daily Maximum} = \text{Min}(LTA_a, LTA_c) \times 3.11$$

$$\text{Daily Average} = 0.051 \times 1.31 = 0.067 \text{ } \Phi\text{g/l}$$

$$\text{Daily Maximum} = 0.051 \times 3.11 = 0.16 \text{ } \Phi\text{g/l}$$

If human health LTA is more limiting:

$$\text{Daily Average} = LTA_h$$

$$\text{Daily Maximum} = LTA_h \times 2.38$$

The resulting allowable effluent concentration is converted to a mass value using the following formula:

$$\begin{aligned} \text{lbs/day} &= (0.000067 \text{ mg/l}) \times 8.34 \times 1.496 \text{ MGD} \\ &= 8.4e^{-4} \end{aligned}$$

Comparison of the reported effluent data (converted to 95th percentile) is made to the calculated effluent limitations. Water Quality Based limits are listed in Appendix B-1, Columns 19-22.

In accordance with the State of Louisiana's implementation procedures, the reported effluent concentration is compared to the calculated daily average concentration. If the effluent concentration is greater than the calculated daily average concentration, then a reasonable potential exists and an effluent limitation for the pollutant of concern is imposed in the permit. (Please refer to Appendix B-1 for the calculated daily average concentration listed in Column 19 and the effluent concentration listed in Column 3.)



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The discharge is considered to pose a reasonable potential to cause a water quality excursion if the estimated 95th percentile of a pollutant in the effluent will result in an instream waste concentration, which is above the applicable State water quality criterion. The 95th percentile of possible effluent concentrations are estimated as follows:

$$C_{95} = C_{\text{mean}} * \exp (1.645 * \Phi - 0.5 * \Phi^2)$$

where: 1.645 = normal distribution factor at 95<sup>th</sup> percentile

$$\Phi^2 = \ln(CV^2 + 1)$$

if CV is assumed = 0.6,

$$\Phi^2 = .307$$

The ratio of the estimated 95th percentile value to the mean ( $C_{95}/C_{\text{mean}}$ ) is calculated :

$$C_{95}/C_{\text{mean}} = 2.13$$

Based upon review of the permittee's effluent data, there are/is one/more pollutant(s) present or potentially present in the effluent discharge in such concentrations which would cause an exceedance of Louisiana's Water Quality Standards. **These/This pollutant(s)** is identified as <list/ name pollutant>. A summary of the evaluation of the permittee's effluent analysis of the toxic pollutants is listed in Appendix B-1. As per LAC 33:IX.2709.F.1, all pollutants limited in permits shall have limitations, standards, or prohibitions expressed in terms of mass. Consequently, water quality-based limitations as seen in the permit are expressed in terms of mass.

# WQBL CALCULATIONS FOR TOWN OF RAYVILLE RAYVILLE WASTEWATER TREATMENT FACILITY LA0020559 AI 19306

DESIGN CAPACITY ( $Q_e$ ): **1.496 MGD**  
 CRITICAL LOW FLOW (7Q10): **3.51 cfs**  
 HARDNESS VALUE: **92.9 mg/L**  
 FIFTEENTH PERCENTILE VALUE FOR TSS: **8 mg/L**

PRIORITY POLLUTANT: **MERCURY**

Hg = Aquatic Life, Dissolved Metal Criteria

- Hg (Acute) =  $2.04 \mu\text{g/l} \times 0.85 = 1.734$
- Hg (Chronic) =  $0.012 \mu\text{g/l}$

## DISSOLVED TO TOTAL METAL CONVERSION

$\frac{C_D}{C_T}$  = Fraction of metal dissolved

$K_p$  = Linear partition coefficient

$K_{p0}$  and  $\alpha$  = factors of  $K_p$  found in Table 1 of the *Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan, Volume 3*, April 16, 2008.

$$\frac{C_D}{C_T} = \frac{1}{1 + (K_p) (TSS) (10^{-6})} \quad K_p = K_{p0} \times TSS^\alpha$$

$$K_p = 2.9 \times 10^6 \times 8^{(-1.14)}$$

$$= 270,941.43$$

$$\frac{C_D}{C_T} = \frac{1}{1 + (270,941.43) (8) (10^{-6})}$$

$$= \frac{1}{3.168}$$

$$= 0.316$$

Dissolved Metal Criteria(Zn)		/	$C_D / C_T$	=	Total Metal Criteria (Cr)
Acute Criteria	1.734 µg/L	/	0.316	=	5.49 µg/L
Chronic Criteria	0.012 µg/L	/	0.316	=	0.038 µg/L

**CRITERIA**

	DISSOLVED	TOTAL
ACUTE	2.04 µg/L	5.49 µg/L
CHRONIC	0.012 µg/L	0.038 µg/L

**DILUTION CALCULATIONS**

$$\text{DILUTION FACTOR} = \frac{Q_e}{Q_r \times F_s + Q_e}$$

$Q_e$  = plant effluent in MGD

$Q_r$  = 7Q10 flow in MGD

$F_s$  = MZ, ZID flow fraction

ZID = Zone of Initial Dilution

MZ = Mixing Zone

$$\bullet \text{ ZID (ACUTE)} = \frac{1.496 \text{ MGD}}{(3.51 \text{ cfs})(0.6463 \text{ MGD/cfs})(0.1 \text{ cfs}) + 1.496 \text{ MGD}} = 0.87$$

$$\bullet \text{ MZ (CHRONIC)} = \frac{1.496 \text{ MGD}}{(3.51 \text{ cfs})(0.6463 \text{ MGD/cfs})(1 \text{ cfs}) + 1.496 \text{ MGD}} = 0.397$$

CONCLUDE THAT:      87% of effluent at edge of ZID  
                                  39.7% of effluent at edge of MZ

**WASTELOAD ALLOCATION (WLA) CALCULATIONS**

$$\text{WLA} = \frac{C_r}{\text{Dilution}} - \frac{F_s \times C_r \times C_u}{Q_e}$$

Dilution = Dilution Factor (ZID or MZ)

$F_s$  = MZ, ZID flow fraction

$C_u$  = Ambient instream concentration, assume  $C_u = 0$

$Q_e$  = plant effluent in MGD

- $WLA_{ZID} (ACUTE) = \frac{5.49 \mu\text{g/L}}{0.87} = 6.31 \mu\text{g/L}$
- $WLA_{MZ} (CHRONIC) = \frac{0.038 \mu\text{g/L}}{0.397} = 0.096 \mu\text{g/L}$

## LONG TERM AVERAGE (LTA) CALCULATIONS

- $LTA_{ZID} (ACUTE) = WLA_{ZID} \times 0.32$   
 $= 6.31 \mu\text{g/L} \times 0.32 = 2.01 \mu\text{g/L}$
- $LTA_{MZ} (CHRONIC) = WLA_{MZ} \times 0.53$   
 $= 0.096 \mu\text{g/L} \times 0.53 = 0.051 \mu\text{g/L}$

## WQBL CALCULATIONS

- **LIMITING LTA** = **0.051  $\mu\text{g/l}$**
- **MONTHLY AVERAGE** = **LIMITING LTA  $\times$  1.31**  
 $= 0.051 \mu\text{g/L} \times 1.31$   
 $= 0.067 \mu\text{g/L}$   
 $= 0.000067 \text{ mg/L} \times 1.496 \text{ MGD} \times 8.34 \text{ lbs/day} = 8.4 \text{ e}^{-4} \text{ lbs/day}$
- **DAILY MAXIMUM** = **LIMITING LTA  $\times$  3.11**  
 $= 0.051 \mu\text{g/L} \times 3.11$   
 $= 0.16 \mu\text{g/L}$   
 $= 0.00016 \text{ mg/L} \times 1.496 \text{ MGD} \times 8.34 \text{ lbs/day} = 1.2 \text{ e}^{-3} \text{ lbs/day}$

wqsmoan.wk4                      Date:      03/31                      Appendix B-1  
 Developer: Bruce Fielding      Time:    02:51 PM  
 Software: Lotus 4.0                      LA0020559 AI 19306  
 Revision date: 08/07/08

Page 1

## Water Quality Screen for Town of Rayville

## Input variables:

## Receiving Water Characteristics:

## Dilution:

ZID Fc = 0.1

Receiving Water Name= Boeuf River

Critical flow (Qr) cfs= 3.51

MZ Fc = 1

Harm. mean/avg tidal cfs= 75.9

Critical Qr (MGD)= 2.268513

Drinking Water=1 HHNPCR=2

Harm. Mean (MGD)= 49.05417

MW=1, BW=2, 0=n

ZID Dilution = 0.868328

Rec. Water Hardness= 92.9

MZ Dilution = 0.3973954

Rec. Water TSS= 8

HHnc Dilution= 0.3973954

Fisch/Specific=1, Stream=0

HMc Dilution= 0.0295944

Diffuser Ratio=

ZID Upstream = 0.1516386

MZ Upstream = 1.5163857

MZhhnc Upstream= 1.5163857

## Effluent Characteristics:

Permittee= Town of Rayville

Permit Number= LA0020559 AI 19306

Facility flow (Qef),MGD= 1.496

MZhhnc Upstream= 32.790221

ZID Hardness= ---

MZ Hardness= ---

ZID TSS= ---

MZ TSS= ---

Multipliers:

WLAA --&gt; LTAA 0.32

WLAC --&gt; LTAC 0.53

LTA a,c--&gt;WQBL avg 1.31

LTA a,c--&gt;WQBL max 3.11

LTA h --&gt; WQBL max 2.38

WQBL-limit/report 2.13

WLA Fraction 1

WQBL Fraction 1

Conversions:

ug/L--&gt;lbs/day Qef 0.0124766

ug/L--&gt;lbs/day Qeo 0

ug/L--&gt;lbs/day Qr 0.0292734

lbs/day--&gt;ug/L Qeo 80.149784

lbs/day--&gt;ug/L Qef 80.149784

diss--&gt;tot 1=y0=n 1

Cu diss--&gt;tot1-y0=n 1

cfs--&gt;MGD 0.6463

## Page Numbering/Labeling

Appendix Appendix B-1

Page Numbers 1=y, 0=n 1

Input Page # 1=y, 0=n 1

## Fischer/Site Specific inputs:

Pipe=1, Canal=2, Specific=3

Pipe width, feet

ZID plume dist., feet

MZ plume dist., feet

HHnc plume dist., feet

HMc plume dist., feet

## Fischer/site specific dilutions:

Dilution = ---

## Receiving Stream:

F/specific MZ Dilution = ---

Default Hardness= 25

F/specific HHnc Dilution= ---

Default TSS= 10

F/specific HMc Dilution= ---

99 Crit., 1=y, 0=n 1

## Partition Coefficients, Dissolved--&gt;Total

## METALS

## FW

Total Arsenic 1.8415415

Total Cadmium 4.0525184

Chromium III 4.8864723

Chromium VI 1

Total Copper 2.7858161

Total Lead 5.2440064

Total Mercury 3.1675314

Total Nickel 2.1981875

Total Zinc 3.3325825

## Aquatic Life, Dissolved

## Metal Criteria, ug/L

## METALS

## ACUTE CHRONIC

Arsenic 339.8 150

Cadmium 29.36458 0.9764098

Chromium III 516.61856 167.58572

Chromium VI 15.712 10.582

Copper 17.19089 11.534759

Lead 59.599637 2.3225123

Mercury 1.734 0.012

Nickel 1329.9106 147.69724

Zinc 107.52403 98.185747

## Site Specific Multiplier Values:

CV = ---

N = ---

WLAA --&gt; LTAA ---

WLAC --&gt; LTAC ---

LTA a,c--&gt;WQBL avg ---

LTA a,c--&gt;WQBL max ---

LTA h --&gt; WQBL max ---

Appendix B-1  
Town of Rayville  
LA0020559 AT 19306

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(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic Parameters	Cu Effluent	Effluent		MQL Effluent	95th %		Numerical Criteria			HH
	Instream	/Tech	/Tech	1=No 95%	estimate		Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)	0=95 %	Non-Tech		FW	FW		Indicator
	ug/L	lbs/day	lbs/day	lbs/day	lbs/day		ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)				0.0623832			700	350	50	
3-Chlorophenol				0.1247664						
4-Chlorophenol				0.1247664			383	192		
2,3-Dichlorophenol				0.1247664						
2,5-Dichlorophenol				0.1247664						
2,6-Dichlorophenol				0.1247664						
3,4-Dichlorophenol				0.1247664						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				0.1247664			625.7558	276.23122		
Total Cadmium				0.0124766			119.0005	3.9569188		
Chromium III				0.1247664			2524.4423	818.90297		
Chromium VI				0.1247664			15.712	10.582		
Total Copper				0.1247664			47.890658	32.133716		
Total Lead				0.0623832			312.54088	12.179269		
Total Mercury		0.00489		0.00249532		0.001041575	4924995.0	0.0380104		
Total Nickel				0.4990656			2923.3928	324.66622		
Total Zinc				0.2495328			358.33271	327.2121		
Total Cyanide				0.2495328			45.9	5.4	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.2E-07					7.2E-07	C
VOLATILE COMPOUNDS										
Benzene				0.1247664			2249	1125	12.5	C
Bromoform				0.1247664			2930	1465	34.7	C
Bromodichloromethane				0.1247664					3.3	C
Carbon Tetrachloride				0.1247664			2730	1365	1.2	C
Chloroform				0.1247664			2890	1445	70	C
Dibromochloromethane				0.1247664					5.08	C
1,2-Dichloroethane				0.1247664			11800	5900	6.8	C
1,1-Dichloroethylene				0.1247664			1160	580	0.58	C
1,3-Dichloropropylene				0.1247664			606	303	162.79	
Ethylbenzene				0.1247664			3200	1600	8100	
Methyl Chloride				0.623832			55000	27500		
Methylene Chloride				0.2495328			19300	9650	87	C
1,1,2,2-Tetrachloro-										
ethane				0.1247664			932	466	1.8	C

## Appendix B-1

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Town of Rayville

LA0020559 AI 19306

(*1)	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic	WLAa	WLAC	WLAh	LTAA	LTAC	LTah	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	
NONCONVENTIONAL												
Total Phenols (4AAP)	806.147	880.73499	125.81928	257.96704	466.78955	125.81928	125.81928	125.81928	299.4499	1.5698019	3.7361286	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	441.07757	483.14605	---	141.14482	256.06741	---	141.14482	184.89972	438.9604	2.3069272	5.4767509	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoc-	---	---	---	---	---	---	---	---	---	---	---	no
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-	---	---	---	---	---	---	---	---	---	---	---	no
oxy) propionic acid	---	---	---	---	---	---	---	---	---	---	---	no
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	720.64451	695.1043	---	230.60624	368.40528	---	230.60624	302.09418	717.18542	3.7691203	8.9480643	no
Total Cadmium	137.04557	9.9571338	---	43.854582	5.2772809	---	5.2772809	6.913238	16.412344	0.086254	0.2047709	no
Chromium III	2907.2451	2060.6757	---	930.31843	1092.1581	---	930.31843	1218.7171	2893.2903	15.205495	36.098542	no
Chromium VI	18.094545	26.628393	---	5.7902545	14.113049	---	5.7902545	7.5852333	18.007691	0.0946382	0.2246755	no
Total Copper	55.152729	80.860824	---	17.648873	42.856237	---	17.648873	23.120024	54.887996	0.2884602	0.6848178	no
Total Lead	359.93413	30.647739	---	115.17892	16.243302	---	16.243302	21.278725	50.516669	0.265487	0.6302783	no
Total Mercury	6.3253742	0.0956488	---	2.0241198	0.0506938	---	0.0506938	0.0664089	0.1576579	0.0008286	0.001967	yes
Total Nickel	3366.6919	816.98543	---	1077.3414	433.00228	---	433.00228	567.23299	1346.6371	7.0771618	16.801506	no
Total Zinc	412.66976	823.39185	---	132.05432	436.39768	---	132.05432	172.99117	410.68895	2.1583485	5.1240182	no
Total Cyanide	52.86021	13.588483	32320.458	16.915267	7.2018959	32320.458	7.2018959	9.4344836	22.397896	0.1177107	0.2794505	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	2.433E-05	---	---	2.433E-05	2.433E-05	2.433E-05	5.79E-05	3.035E-07	7.224E-07	no
VOLATILE COMPOUNDS												
Benzene	2590.0351	2830.9339	422.37776	828.81125	1500.395	422.37776	422.37776	422.37776	1005.2591	5.2698552	12.542255	no
Bromoform	3374.301	3686.505	1172.5207	1079.7763	1953.8477	1172.5207	1079.7763	1414.507	3358.1044	17.648294	41.897859	no
Bromodichloromethane	---	---	111.50773	---	---	111.50773	111.50773	111.50773	265.38839	1.3912418	3.3111554	no
Carbon Tetrachloride	3143.9733	3434.8665	40.548265	1006.0715	1820.4792	40.548265	40.548265	40.548265	96.50487	0.5059061	1.2040565	no
Chloroform	3328.2355	3636.1773	2365.3154	1065.0353	1927.174	2365.3154	1065.0353	1395.1963	3312.2599	17.407362	41.325875	no
Dibromochloromethane	---	---	171.65432	---	---	171.65432	171.65432	171.65432	408.53728	2.1416692	5.0971726	no
1,2-Dichloroethane	13589.335	14846.676	229.7735	4348.5872	7868.7381	229.7735	229.7735	229.7735	546.86093	2.8668012	6.822987	no
1,1-Dichloroethylene	1335.9007	1459.5037	19.598328	427.48824	773.53696	19.598328	19.598328	19.598328	46.644021	0.2445213	0.5819607	no
1,3-Dichloropropylene	697.89297	762.46487	409.64243	223.32575	404.10638	409.64243	223.32575	292.55673	694.54309	3.6501251	8.6655641	no
Ethylbenzene	3685.2434	4026.2171	20382.724	1179.2779	2133.8951	20382.724	1179.2779	1544.854	3667.5543	19.274588	45.758754	no
Methyl Chloride	63340.121	69200.607	---	20268.839	36676.322	---	20268.839	26552.179	63036.089	331.28198	786.47859	no
Methylene Chloride	22226.624	24283.122	2939.7492	7112.5198	12870.055	2939.7492	2939.7492	2939.7492	6996.6031	36.678192	87.294098	no
1,1,2,2-Tetrachloro-	---	---	---	---	---	---	---	---	---	---	---	---
ethane	1073.3271	1172.6357	60.822397	343.46469	621.49694	60.822397	60.822397	60.822397	144.75731	0.7588592	1.8060848	no

[illegible]



	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic Parameters	WLaA	WLAc	WLAh	LTAA	LTAc	LTAH	Limiting	WOBL	WOBL	WOBL	WOBL	Need
	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WOBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	
								ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1485.6138	1623.0688	84.475551	475.3964	860.22645	84.475551	84.475551	84.475551	201.05181	1.053971	2.5084511	no
Toluene	1462.581	1597.9049	116257.02	468.02591	846.88961	116257.02	468.02591	613.11395	1455.5606	7.649602	18.160506	no
1,1,1-Trichloroethane	6080.6516	6643.2582	---	1945.8085	3520.9269	---	1945.8085	2549.0092	6051.4645	31.80307	75.501944	no
1,1,2-Trichloroethane	2072.9494	2264.7471	233.15252	663.34382	1200.316	233.15252	233.15252	233.15252	554.903	2.9089601	6.923325	no
Trichloroethylene	4491.3904	4906.9521	709.59463	1437.2449	2600.6846	709.59463	709.59463	709.59463	1688.8352	8.8533568	21.070989	no
Vinyl Chloride	---	---	1209.6899	---	---	1209.6899	1209.6899	1209.6899	2879.062	15.092865	35.92102	no
ACID COMPOUNDS												
2-Chlorophenol	297.12275	324.61375	318.07115	95.07928	172.04529	318.07115	95.07928	124.55386	295.69656	1.5540136	3.6892995	no
2,4-Dichlorophenol	232.63099	254.15496	585.31131	74.441917	134.70213	585.31131	74.441917	97.518911	231.51436	1.2167084	2.8885214	no
BASE NEUTRAL COMPOUNDS												
Benzidine	287.90964	314.54821	0.0057443	92.131086	166.71055	0.0057443	0.0057443	0.0057443	0.0136715	7.167E-05	0.0001706	no
Hexachlorobenzene	---	---	0.0084476	---	---	0.0084476	0.0084476	0.0084476	0.0201052	0.0001054	0.0002508	no
Hexachlorobutadiene	5.8733567	2.5667134	3.7169243	1.8794741	1.3603581	3.7169243	1.3603581	1.7820691	4.2307137	0.0222342	0.0527851	no
PESTICIDES												
Aldrin	3.4549157	---	0.0135161	1.105573	---	0.0135161	0.0135161	0.0135161	0.0321683	0.0001686	0.0004014	no
Hexachlorocyclohexane (gamma BHC, Lindane)	6.1036844	0.528441	6.7580441	1.953179	0.2800737	6.7580441	0.2800737	0.3668966	0.8710293	0.0045776	0.0108675	no
Chlordane	2.7639326	0.0108205	0.0064201	0.8844584	0.0057348	0.0064201	0.0057348	0.0075126	0.0178354	9.373E-05	0.0002225	no
4,4'-DDT	1.2668024	0.0025164	0.0064201	0.4053768	0.0013337	0.0064201	0.0013337	0.0017471	0.0041478	2.18E-05	5.175E-05	no
4,4'-DDE	60.461025	26.42205	0.0064201	19.347528	14.003686	0.0064201	0.0064201	0.0064201	0.0152799	8.01E-05	0.0001906	no
4,4'-DDD	0.0345492	0.0150983	0.0091234	0.0110557	0.0080021	0.0091234	0.0080021	0.0104828	0.0248866	0.0001308	0.0003105	no
Dieldrin	0.273399	0.1401627	0.0016895	0.0874877	0.0742862	0.0016895	0.0016895	0.0016895	0.004021	2.108E-05	5.017E-05	no
Endosulfan	0.2533605	0.1409176	1.6104868	0.0810754	0.0746863	1.6104868	0.0746863	0.0978391	0.2322745	0.0012207	0.002898	no
Endrin	0.0995016											

wqsmoan.wk4 Date: 03/31 Appendix B-1  
 Developer: Bruce Fielding Time: 11:17 AM  
 Software: Lotus 4.0 LA0020559 AI 19306  
 Revision date: 08/07/08

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## Water Quality Screen for Town of Rayville

## Input variables:

Receiving Water Characteristics: Dilution:  
 ZID Fb = 0.1  
 Receiving Water Name= Boeuf River  
 Critical flow (Qr) cfs= 3.51 MZ Fb = 1  
 Harm. mean/avg tidal cfs= 75.9 Critical Qr (MGD)= 2.268513  
 Drinking Water=1 HHNPCR=2 Harm. Mean (MGD)= 49.05417  
 MW=1, BW=2, O=n ZID Dilution = 0.868328  
 Rec. Water Hardness= 92.9 MZ Dilution = 0.3973954  
 Rec. Water TSS= 8 HHnc Dilution= 0.3973954  
 Fisch/Specific=1, Stream=0 HHc Dilution= 0.0295944  
 Diffuser Ratio= ZID Upstream = 0.1516386  
 MZ Upstream = 1.5163857  
 Effluent Characteristics: MZhhnc Upstream= 1.5163857

## Partition Coefficients; Dissolved--&gt;Total

Permittee= Town of Rayville  
 Permit Number= LA0020559 AI 19306  
 Facility flow (Qef),MGD= 1.496 MZhhnc Upstream= 32.790221  
 ZID Hardness= ---  
 MZ Hardness= ---  
 ZID TSS= ---  
 MZ TSS= ---  
 Multipliers:  
 WLAa --> LTAA 0.32  
 WLAC --> LTAC 0.53  
 LTA a,c-->WQBL avg 1.31  
 LTA a,c-->WQBL max 3.11  
 LTA h --> WQBL max 2.38  
 WQBL-limit/report 2.13  
 WLA Fraction 1  
 WQBL Fraction 1  
 Conversions:  
 ug/L-->lbs/day Qef 0.0124766  
 ug/L-->lbs/day Qeo 0  
 ug/L-->lbs/day Qr 0.0292734  
 lbs/day-->ug/L Qeo 80.149784  
 lbs/day-->ug/L Qef 80.149784  
 diss-->tot 1=y0=n 1  
 Cu diss-->tot1=y0=n 1  
 cfs-->MGD 0.6463  
 Page Numbering/Labeling  
 Appendix Appendix B-1  
 Page Numbers 1=y, 0=n 1  
 Input Page # 1=y, 0=n 1

METALS	FW
Total Arsenic	1.8415415
Total Cadmium	4.0525184
Chromium III	4.8864723
Chromium VI	1
Total Copper	2.7858161
Total Lead	5.2440064
Total Mercury	3.1675314
Total Nickel	2.1981875
Total Zinc	3.3325825

## Aquatic Life, Dissolved

## Metal Criteria, ug/L

METALS	ACUTE	CHRONIC
Arsenic	339.8	150
Cadmium	29.36458	0.9764098
Chromium III	516.61856	167.58572
Chromium VI	15.712	10.582
Copper	17.19089	11.534759
Lead	59.599637	2.3225123
Mercury	1.734	0.012
Nickel	1329.9106	147.69724
Zinc	107.52403	98.185747

## Site Specific Multiplier Values:

CV = ---  
 N = ---  
 WLAa --> LTAA ---  
 WLAC --> LTAC ---  
 LTA a,c-->WQBL avg ---  
 LTA a,c-->WQBL max ---  
 LTA h --> WQBL max ---

Fischer/Site Specific inputs:  
 Pipe=1, Canal=2, Specific=3  
 Pipe width, feet  
 ZID plume dist., feet  
 MZ plume dist., feet  
 HHnc plume dist., feet  
 HHc plume dist., feet  
 Fischer/site specific dilutions:  
 Dilution = --- Receiving Stream:  
 F/specific MZ Dilution = --- Default Hardness= 25  
 F/specific HHnc Dilution= --- Default TSS= 10  
 F/specific HHc Dilution= --- 99 Crit., 1=y, 0=n 1

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(+1)	(+2)	(+3)	(+4)	(+5)	(+6)	(+7)	(+8)	(+9)	(+10)	(+11)
Toxic Parameters	Cu Effluent		Effluent	MQL Effluent		95th %	Numerical Criteria			HH
	Instream	/Tech	/Tech	1=No 95%	estimate	Non-Tech	Acute	Chronic	HHNDW	Carcinogen
	Conc.	(Avg)	(Max)	0=95 %			FW	FW		Indicator
	ug/L	ug/L	ug/L	ug/L		ug/L	ug/L	ug/L	ug/L	"C"
NONCONVENTIONAL										
Total Phenols (4AAP)				5			700	350	50	
3-Chlorophenol				10						
4-Chlorophenol				10			383	192		
2,3-Dichlorophenol				10						
2,5-Dichlorophenol				10						
2,6-Dichlorophenol				10						
3,4-Dichlorophenol				10						
2,4-Dichlorophenoc-										
acetic acid (2,4-D)				---						
2-(2,4,5-Trichlorophen-										
oxy) propionic acid										
(2,4,5-TP, Silvex)				---						
METALS AND CYANIDE										
Total Arsenic				10			625.7558	276.23122		
Total Cadmium				1			119.0005	3.9569188		
Chromium III				10			2524.4423	818.90297		
Chromium VI				10			15.712	10.582		
Total Copper				10			47.890658	32.133716		
Total Lead				5			312.54088	12.179269		
Total Mercury				0.2			5.4924995	0.0380104		
Total Nickel				40			2923.3928	324.66622		
Total Zinc				20			358.33271	327.2121		
Total Cyanide				20			45.9	5.4	12844	
DIOXIN										
2,3,7,8 TCDD; dioxin				1.0E-05					7.2E-07	C
VOLATILE COMPOUNDS										
Benzene				10			2249	1125	12.5	C
Bromoform				10			2930	1465	34.7	C
Bromodichloromethane				10					3.3	C
Carbon Tetrachloride				10			2730	1365	1.2	C
Chloroform				10			2890	1445	70	C
Dibromochloromethane				10					5.08	C
1,2-Dichloroethane				10			11800	5900	6.8	C
1,1-Dichloroethylene				10			1160	580	0.58	C
1,3-Dichloropropylene				10			606	303	162.79	
Ethylbenzene				10			3200	1600	8100	
Methyl Chloride				50			55000	27500		
Methylene Chloride				20			19300	9650	87	C
1,1,2,2-Tetrachloro-										
ethane				10			932	466	1.8	C

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(+1)	(+12)	(+13)	(+14)	(+15)	(+16)	(+17)	(+18)	(+19)	(+20)	(+21)	(+22)	(+23)
Toxic	WLAA	WLAC	WLAH	LTAa	LTAC	LTAH	Limiting	WQBL	WQBL	WQBL	WQBL	Need
Parameters	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A.C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	001	001	001	001	
								ug/L	ug/L	lbs/day	lbs/day	
NONCONVENTIONAL												
Total Phenols (4AAP)	806.147	880.73499	125.81928	257.96704	466.78955	125.81928	125.81928	125.81928	299.4499	1.5698019	3.7361286	no
3-Chlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
4-Chlorophenol	441.07757	483.14605	---	141.14482	256.06741	---	141.14482	184.89972	438.9604	2.3069272	5.4767509	no
2,3-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,5-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,6-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
3,4-Dichlorophenol	---	---	---	---	---	---	---	---	---	---	---	no
2,4-Dichlorophenoxy-												
acetic acid (2,4-D)	---	---	---	---	---	---	---	---	---	---	---	no
2-(2,4,5-Trichlorophen-												
oxy) propionic acid												
(2,4,5-TP, Silvex)	---	---	---	---	---	---	---	---	---	---	---	no
METALS AND CYANIDE												
Total Arsenic	720.64451	695.1043	---	230.60624	368.40528	---	230.60624	302.09418	717.18542	3.7691203	8.9480643	no
Total Cadmium	137.04557	9.9571338	---	43.854582	5.2772809	---	5.2772809	6.913238	16.412344	0.086254	0.2047709	no
Chromium III	2907.2451	2060.6757	---	930.31843	1092.1581	---	930.31843	1218.7171	2893.2903	15.205495	36.098542	no
Chromium VI	18.094545	26.628393	---	5.7902545	14.113049	---	5.7902545	7.5852333	18.007691	0.0946382	0.2246755	no
Total Copper	55.152729	80.860824	---	17.648873	42.856237	---	17.648873	23.120024	54.887996	0.2884602	0.6848178	no
Total Lead	359.93413	30.647739	---	115.17892	16.243302	---	16.243302	21.278725	50.516669	0.265487	0.6302783	no
Total Mercury	6.3253742	0.0956488	---	2.0241198	0.0506938	---	0.0506938	0.0664089	0.1576579	0.0008286	0.001967	no
Total Nickel	3366.6919	816.98543	---	1077.3414	433.00228	---	433.00228	567.23299	1346.6371	7.0771618	16.801506	no
Total Zinc	412.66976	823.39185	---	132.05432	436.39768	---	132.05432	172.99117	410.68895	2.1583485	5.1240182	no
Total Cyanide	52.86021	13.588483	32320.458	16.915267	7.2018959	32320.458	7.2018959	9.4344836	22.397896	0.1177107	0.2794505	no
DIOXIN												
2,3,7,8 TCDD; dioxin	---	---	2.433E-05	---	---	2.433E-05	2.433E-05	2.433E-05	5.79E-05	3.035E-07	7.224E-07	no
VOLATILE COMPOUNDS												
Benzene	2590.0351	2830.9339	422.37776	828.81125	1500.395	422.37776	422.37776	422.37776	1005.2591	5.2698552	12.542255	no
Bromoform	3374.301	3686.505	1172.5207	1079.7763	1953.8477	1172.5207	1079.7763	1414.507	3358.1044	17.648294	41.897859	no
Bromodichloromethane	---	---	111.50773	---	---	111.50773	111.50773	111.50773	265.38839	1.3912418	3.3111554	no
Carbon Tetrachloride	3143.9733	3434.8665	40.548265	1006.0715	1820.4792	40.548265	40.548265	40.548265	96.50487	0.5059061	1.2040565	no
Chloroform	3328.2355	3636.1773	2365.3154	1065.0353	1927.174	2365.3154	1065.0353	1395.1963	3312.2599	17.407362	41.325875	no
Dibromochloromethane	---	---	171.65432	---	---	171.65432	171.65432	171.65432	408.53728	2.1416692	5.0971726	no
1,2-Dichloroethane	13589.335	14846.676	229.7735	4346.5872	7868.7381	229.7735	229.7735	229.7735	546.86093	2.8668012	6.822987	no
1,1-Dichloroethylene	1335.9007	1459.5037	19.598328	427.48824	773.53696	19.598328	19.598328	19.598328	46.644021	0.2445213	0.5819607	no
1,3-Dichloropropylene	697.89297	762.46487	409.64243	223.32575	404.10638	409.64243	223.32575	292.55673	694.54309	3.6501251	8.6655641	no
Ethylbenzene	3685.2434	4026.2171	20382.724	1179.2779	2133.8951	20382.724	1179.2779	1544.854	3667.5543	19.274588	45.758754	no
Methyl Chloride	63340.121	69200.607	---	20268.839	36676.322	---	20268.839	26552.179	63036.089	331.28198	786.47859	no
Methylene Chloride	22226.624	24283.122	2939.7492	7112.5198	12870.055	2939.7492	2939.7492	2939.7492	6996.6031	36.678192	87.294098	no
1,1,2,2-Tetrachloro-												
ethane	1073.3271	1172.6357	60.822397	343.46469	621.49694	60.822397	60.822397	60.822397	144.75731	0.7588592	1.8060848	no

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Town of Rayville  
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(*1)	(*2)	(*3)	(*4)	(*5)	(*6)	(*7)	(*8)	(*9)	(*10)	(*11)
Toxic Parameters	Cu Effluent Instream Conc. ug/L	Effluent /Tech (Avg) ug/L	Effluent /Tech (Max) ug/L	MQL Effluent 1=No 95% 0=95 % ug/L	95th % estimate Non-Tech ug/L	Numerical Criteria Acute FW ug/L	Chronic FW ug/L	HHNDW ug/L	Carcinogen Indicator "C"	

## VOLATILE COMPOUNDS (cont'd)

Tetrachloroethylene				10		1290	645	2.5	C
Toluene				10		1270	635	46200	
1,1,1-Trichloroethane				10		5280	2640		
1,1,2-Trichloroethane				10		1800	900	6.9	C
Trichloroethylene				10		3900	1950	21	C
Vinyl Chloride				10				35.8	C

## ACID COMPOUNDS

2-Chlorophenol				10		258	129	126.4	
2,4-Dichlorophenol				10		202	101	232.6	

## BASE NEUTRAL COMPOUNDS

Benzidine				50		250	125	0.00017	C
Hexachlorobenzene				10				0.00025	C
Hexachlorobutadiene				10		5.1	1.02	0.11	C

## PESTICIDES

Aldrin				0.05		3		0.0004	C
Hexachlorocyclohexane (gamma BHC, Lindane)				0.05		5.3	0.21	0.2	C
Chlordane				0.2		2.4	0.0043	0.00019	C
4,4'-DDT				0.1		1.1	0.001	0.00019	C
4,4'-DDE				0.1		52.5	10.5	0.00019	C
4,4'-DDD				0.1		0.03	0.006	0.00027	C
Dieldrin				0.1		0.2374	0.0557	0.00005	C
Endosulfan				0.1		0.22	0.056	0.64	
Endrin				0.1		0.0864	0.0375	0.26	
Heptachlor				0.05		0.52	0.0038	0.00007	C
						2	0.014		
Toxaphene				5		0.73	0.0002	0.00024	C

## Other Parameters:

Fecal Col. (col/100ml)

Chlorine	283.75	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
----------	--------	--------	--------	--------	--------	--------	--------	--------	--------

Ammonia

Chlorides

Sulfates

TDS

	(*12)	(*13)	(*14)	(*15)	(*16)	(*17)	(*18)	(*19)	(*20)	(*21)	(*22)	(*23)
Toxic Parameters	WLAA	WLAC	WLALH	LTAA	LTAC	LTALH	Limiting	WQBL	WQBL	WQBL	WQBL	Need
	Acute	Chronic	HHNDW	Acute	Chronic	HHNDW	A,C,HH	Avg	Max	Avg	Max	WQBL?
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	lbs/day	lbs/day	
Tetrachloroethylene	1485.6138	1623.0688	84.475551	475.3964	860.22645	84.475551	84.475551	84.475551	201.05181	1.053971	2.5084511	no
Toluene	1462.581	1597.9049	116257.02	468.02591	846.88961	116257.02	468.02591	613.11395	1455.5606	7.649602	18.160506	no
1,1,1-Trichloroethane	6080.6516	6643.2582	---	1945.8085	3520.9269	---	1945.8085	2549.0092	6051.4645	31.80307	75.501944	no
1,1,2-Trichloroethane	2072.9494	2264.7471	233.15252	663.34382	1200.316	233.15252	233.15252	233.15252	554.903	2.9089601	6.923325	no
Trichloroethylene	4491.3904	4906.9521	709.59463	1437.2449	2600.6846	709.59463	709.59463	709.59463	1688.8352	8.8533568	21.070989	no
Vinyl Chloride	---	---	1209.6899	---	---	1209.6899	1209.6899	1209.6899	2879.062	15.092865	35.92102	no
ACID COMPOUNDS												
2-Chlorophenol	297.12275	324.61375	318.07115	95.07928	172.04529	318.07115	95.07928	124.55386	295.69656	1.5540136	3.6892995	no
2,4-Dichlorophenol	232.63099	254.15496	585.31131	74.441917	134.70213	585.31131	74.441917	97.518911	231.51436	1.2167084	2.8885214	no
BASE NEUTRAL COMPOUNDS												
Benzidine	287.90964	314.54821	0.0057443	92.131086	166.71055	0.0057443	0.0057443	0.0057443	0.0136715	7.167E-05	0.0001706	no
Hexachlorobenzene	---	---	0.0084476	---	---	0.0084476	0.0084476	0.0084476	0.0201052	0.0001054	0.0002508	no
Hexachlorobutadiene	5.8733567	2.5667134	3.7169243	1.8794741	1.3603581	3.7169243	1.3603581	1.7820691	4.2307137	0.0222342	0.0527851	no
PESTICIDES												
Aldrin	3.4549157	---	0.0135161	1.105573	---	0.0135161	0.0135161	0.0135161	0.0321683	0.0001686	0.0004014	no
Hexachlorocyclohexane (gamma BHC, Lindane)	6.1036844	0.528441	6.7580441	1.953179	0.2800737	6.7580441	0.2800737	0.3668966	0.8710293	0.0045776	0.0108675	no
Chlordane	2.7639326	0.0108205	0.0064201	0.8844584	0.0057348	0.0064201	0.0057348	0.0075126	0.0178354	9.373E-05	0.0002225	no
4,4'-DDT	1.2668024	0.0025164	0.0064201	0.4053768	0.0013337	0.0064201	0.0013337	0.0017471	0.0041478	2.18E-05	5.175E-05	no
4,4'-DDE	60.461025	26.42205	0.0064201	19.347528	14.003686	0.0064201	0.0064201	0.0064201	0.0152799	8.01E-05	0.0001906	no
4,4'-DDD	0.0345492	0.0150983	0.0091234	0.0110557	0.0080021	0.0091234	0.0080021	0.0104828	0.0248866	0.0001308	0.0003105	no
Dieldrin	0.273399	0.1401627	0.0016895	0.0874877	0.0742862	0.0016895	0.0016895	0.0016895	0.004021	2.108E-05	5.017E-05	no
Endosulfan	0.2533605	0.1409176	1.6104868	0.0810754	0.0746863	1.6104868	0.0746863	0.0978391	0.2322745	0.0012207	0.002898	no
Endrin	0.0995016	0.0943645	0.6542603	0.0318405	0.0500132	0.6542603	0.0318405	0.0417111	0.099024	0.0005204	0.0012355	no
Heptachlor	0.5988521	0.0095623	0.0023653	0.1916327	0.005068	0.0023653	0.0023653	0.0023653	0.0056295	2.951E-05	7.024E-05	no
Toxaphene	0.8406962	0.0005033	0.0081097	0.2690228	0.0002667	0.0081097	0.0002667	0.0003494	0.0008296	4.36E-06	1.035E-05	no
Other Parameters:												
Fecal Col. (col/100ml)	---	---	---	---	---	---	---	---	---	---	---	no
Chlorine	21.881133	27.680243	---	---	---	---	---	---	---	---	---	no
Ammonia	---	---	---	---	---	---	---	---	---	---	---	no
Chlorides	---	---	---	---	---	---	---	---	---	---	---	no
Sulfates	---	---	---	---	---	---	---	---	---	---	---	no
TDS	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no
	---	---	---	---	---	---	---	---	---	---	---	no

## MEMORANDUM

TO: Rachel Davis

FROM: Todd Franklin

DATE: January 23, 2009

RE: Stream Flow and Water Quality Characteristics for the Boeuf River, receiving water for the Town of Rayville WWTF (Permit No. LA0020559, AI: 19306)

Determinations of water quality characteristics for Outfall 001 were taken from ambient monitoring station #327 (Boeuf River at the US 80 bridge west of Rayville, Louisiana) and random station #1484 (Boeuf River at the bridge on Highway 80, 0.5 mile east of Girard and 2.3 miles west of Rayville, Louisiana). The following hardness and TSS data was obtained:

Average hardness = 92.9 mg/l  
15<sup>th</sup> percentile TSS = 8 mg/l

The effluent will be discharged into an unnamed ditch; thence into Boeuf River. In a series of memorandums from Max Forbes to Paula Roberts, dated January 24, 2003, and March 7, 2003, the 7Q10 of the Boeuf River at this discharge point was determined to be 3.51 cfs. The harmonic mean flow at this particular site was determined to be 75.9 cfs. There has been no significant change to the hydrology of the receiving stream; therefore, these values should be used in permit limits calculations.

If you have additional questions or comments, please contact me at 2-3102.

**Geo Mean Calculations****Town of Rayville/ Rayville Wastewater Treatment Facility****LA0020559****AI 19306****Mercury**

0.001

0.002

0.0014

1.67

0.003

0.002

0.0003

0.0001

1.926

**TRC**

2.5

2.8

2.8

2.9

3.4

2.7

GeoMean = 0.004897542

GeoMean= 2.837370996



# **BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS**

Permit Number: **LA0020559**  
 Facility Name: **Town of Rayville**  
 Previous Critical Biomonitoring Dilution: **40% (WET Limit)**  
 Proposed Critical Biomonitoring Dilution: **40% (WET Limit)**  
 Date of Review: **02/03/09**      Name of Reviewer: **Laura Thompson**

## Recommended Frequency by Species:

*Pimephales promelas* (Fathead minnow): **Once/Quarter<sup>1</sup>**  
*Ceriodaphnia dubia* (water flea): **Once/Quarter<sup>1</sup>**

Recommended Dilution Series: **17%, 22%, 30%, 40%, and 53%**

## Number of Tests Performed during previous 5 years by Species:

*Pimephales promelas* (Fathead minnow): **15**  
*Daphnia pulex* (water flea): **N/A – Testing of species was not required**  
*Ceriodaphnia dubia* (water flea): **18**

## Number of Failed Tests during previous 5 years by Species:

*Pimephales promelas* (Fathead minnow): **4 sub-lethal**  
*Daphnia pulex* (water flea): **N/A – Testing of species was not required**  
*Ceriodaphnia dubia* (water flea): **1 lethal, 1 sub-lethal**

## Failed Test Dates during previous 5 years by Species:

*Pimephales promelas* (Fathead minnow): **Testing periods of: 1/1/04-3/31/04 (sub-lethal); 4/1/04-6/30/04 (sub-lethal); 4/1/06-6/30/06 (sub-lethal); 4/1/07-6/30/07 (sub-lethal)**  
*Daphnia pulex* (water flea): **N/A – Testing of species was not required**  
*Ceriodaphnia dubia* (water flea): **Testing period of: 4/1/08-6/30/08 (lethal & sub-lethal)**

Previous TRE Activities: **N/A – No previous TRE Activities**

<sup>1</sup> Since a WET limit shall be incorporated into this permit, this facility shall have an established biomonitoring testing frequency of once per quarter for the term of the permit

## FRESHWATER CHRONIC

## Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

The Town of Rayville owns and operates an existing publicly owned treatment works serving the Town of Rayville in Rayville, Richland Parish, Louisiana. LPDES Permit LA0020559, effective January 1, 2004, contained freshwater chronic biomonitoring (with a WET limit) as an effluent characteristic of Outfall 001 for *Ceriodaphnia dubia* and *Pimephales promelas*. The effluent series consisted of 17%, 22%, 30%, 40%, and 53% concentrations, with 40% effluent concentration being defined as the critical biomonitoring dilution/WET limit. The testing was to be performed quarterly for the *Ceriodaphnia dubia* and *Pimephales promelas*. Toxicity testing data on file shows 1 lethal and 1 sub-lethal failure to the *Ceriodaphnia dubia*, and 4 sub-lethal failures to the *Pimephales promelas* during the past five years.

This facility has experienced several biomonitoring failures during the previous permit cycle. In addition, several routine and follow-up biomonitoring testing results/DMRs are not included in LDEQ's file record. A reasonable potential analysis also shows that reasonable potential for future toxicity exists for the Town of Rayville. For these reasons, it is recommended that freshwater chronic biomonitoring (with a WET limit) continue to be an effluent characteristic of Outfall 001 (discharge of 1.496 mgd of treated sanitary wastewater) in LA0020559. The effluent biomonitoring dilution series shall be 17%, 22%, 30%, 40%, and 53% concentrations, with 40% being defined as the critical biomonitoring dilution/WET limit. The recommended biomonitoring frequency shall be once per quarter for *Ceriodaphnia dubia* and *Pimephales promelas* for the term of the permit.

This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan Volume 3. Version 6 (April 16, 2008), and the Best Professional Judgment (BPJ) of the reviewer.

## PRETREATMENT EVALUATION AND RECOMMENDATION

**FACILITY NAME:** *Town of Rayville WWTP*

**CITY:** *Rayville*

**PARISH:** *Richland*

**PERMIT #:** *LA0020559*

**DESIGN FLOW:** *1.496 MGD*

**ESTIMATED OR EXPECTED TREATED WASTEWATER FLOW:** *0.4234 MGD*

**OTHER POTWs IN SYSTEM:** *N/A*

**INDUSTRIES LISTED IN MANUFACTURERS GUIDE AND/OR LPDES PERMIT APPLICATION:**

Industry Name	Type of Industry	Direct or Indirect Discharger
Belote Productions	Manufactures electric household cooking utensils	N/A <sup>1</sup>
Kadant Black Clawson Inc.	Manufactures paper industry machinery	Indirect <sup>2</sup>
Louisiana State Newspapers Inc.	Publishes and prints newspapers	Indirect <sup>3</sup>
Rayville U-Pak-It Inc.	Retail gasoline filling station; manufactures gasoline blending plants; retail independent convenience store; gas and oil field exploration services	Indirect <sup>4</sup>
Regina Shoemaker <sup>5</sup>	Manufactures signs and advertising specialties; commercial screen printing service	Indirect <sup>3</sup>
Richardson Medical Center Inc.	Acute care hospital	Indirect <sup>6</sup>

<sup>1</sup> This facility is outside the Town of Rayville city limits and is therefore not connected to the WWTP.

<sup>2</sup> This facility is a machine and metal fabrication shop. Any oily wastewater produced in the process area is hauled offsite. The discharge is sanitary wastewater only.

<sup>3</sup> The discharge is sanitary wastewater only.

<sup>4</sup> This facility is a convenience store/truck stop with a fast food sandwich shop inside. The discharge is sanitary wastewater only.

<sup>5</sup> Also called Shirt & Sign Worx.

<sup>6</sup> The discharge is process and sanitary wastewater; however, pretreatment standards have not been developed for this industry.

Industry Name	Type of Industry	Direct or Indirect Discharger
Texas Industries Inc.	Manufactures ready-mixed concrete	Direct <sup>7</sup>
Trimble Navigation Limited Inc. <sup>8</sup>	Laser plane GPS ground leveling service	Indirect <sup>9</sup>

#### STANDARD LANGUAGE RECOMMENDATION AND JUSTIFICATION:

*Due to the absence of pretreatment categorical standards for the indirect discharges listed above or because the discharge is of sanitary wastewater only, it is recommended that LDEQ Option 1 Pretreatment Language be included in LPDES Permit LA0020559. This language is established for municipalities that do not have either an approved or required Pretreatment program. This recommendation is in accordance with 40 CFR Part 403 regulations, the General Pretreatment Regulations for Existing and New Sources of Pollution contained in LAC Title 33, Part IX, Chapter 61 and the Best Professional Judgement (BPJ) of the reviewer.*

<sup>7</sup> The process wastewater from this facility is regulated by LDEQ General Permit LAG110071 (regulates discharges from Cement, Concrete & Asphalt Facilities).

<sup>8</sup> Also known as Spectra Physics.

<sup>9</sup> The discharge is sanitary wastewater only.